



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,384	12/08/2003	Nathaniel Ian Joos	9351-324	8153
1059	7590	05/15/2007		
BERESKIN AND PARR 40 KING STREET WEST BOX 401 TORONTO, ON M5H 3Y2 CANADA			EXAMINER CANTELMO, GREGG	
			ART UNIT 1745	PAPER NUMBER
			MAIL DATE 05/15/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/729,384	Applicant(s) IAN JOOS ET AL.	
	Examiner Gregg Cantelmo	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-20 and 22-30 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,9-18,20 and 22-30 is/are rejected.
- 7) ☒ Claim(s) 6-8 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1745

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213. (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on March 5, 2007 has been entered.

Response to Continued Examination (RCE)

2. In response to the RCE identified above:
- a. Claims 1, 4-20 and 22-30 are pending.

Information Disclosure Statement

3. The information disclosure statement filed March 5, 2007 has been placed in the application file and the information referred to therein has been considered as to the merits. It is noted that the instant application claims benefit to U.S. provisional Application serial No. 60/431,235, filed December 6, 2002 and appears to fully support the claimed subject matter. Thus JP 2003-007328 (published January 10, 2003) and EP 1341249 (published September 3, 2003) post-date the earliest effective filing date of the instant application and do not qualify as prior art.

Drawings

4. The drawings were received on March 30, 2007. These drawings are approved.

Claim Objections

5. Claim 11 objected to because of the following informalities: at line 14, the claim recites “.” but there after includes additional lines. Applicant is advised to delete the period in line 14 of claim 11 to overcome this objection. Appropriate correction is required.

6. Claim 28 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 25. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). In combination each of claims 25 and 28 appear to recite the same claimed structure and thus are duplicate claims. Applicant is advised to amend either of the claims to distinguish the two claimed inventions else cancel claim 28.

7. Also claim 23 is objected to for being a duplicate of claims 22. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). In combination each of claims 20 and 23 appear to recite the same claimed structure and thus are duplicate claims. Applicant is advised to amend either of the claims to distinguish the two claimed inventions else cancel claim 23.

Claim Rejections - 35 USC § 102

Art Unit: 1745

The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. Claims 1, 5, 9, 11-13, 16, 18, 20, 24-30 are rejected under 35

U.S.C. 102(a) as being anticipated by WO 02/093669 (WO '669).

WO '669 discloses an electrochemical cell and method of impeding leakage of process fluids from an electrochemical cell having a membrane electrode assembly (MEA) therein comprising: a membrane electrode assembly 5/6/5; a first reactant flow field plate 10 for providing a first reactant flow field disposed on one side of the membrane electrode assembly; a seal disposed between the first reactant flow field plate and the membrane electrode assembly for impeding leakage of process fluids of the electrochemical cell; a first gas diffusion layer (top layer 1) disposed between the first reactant flow field plate 10 and the membrane electrode assembly for diffusing reactant from the first reactant flow field to the membrane electrode assembly and comprising a porous body 1 for diffusing the reactant from the reactant flow field to the membrane electrode assembly; a second reactant flow field plate (not shown but held to be on the side below lower diffusion layer 1) for providing a second reactant flow field disposed on the other side of the membrane electrode assembly (Fig. 10).

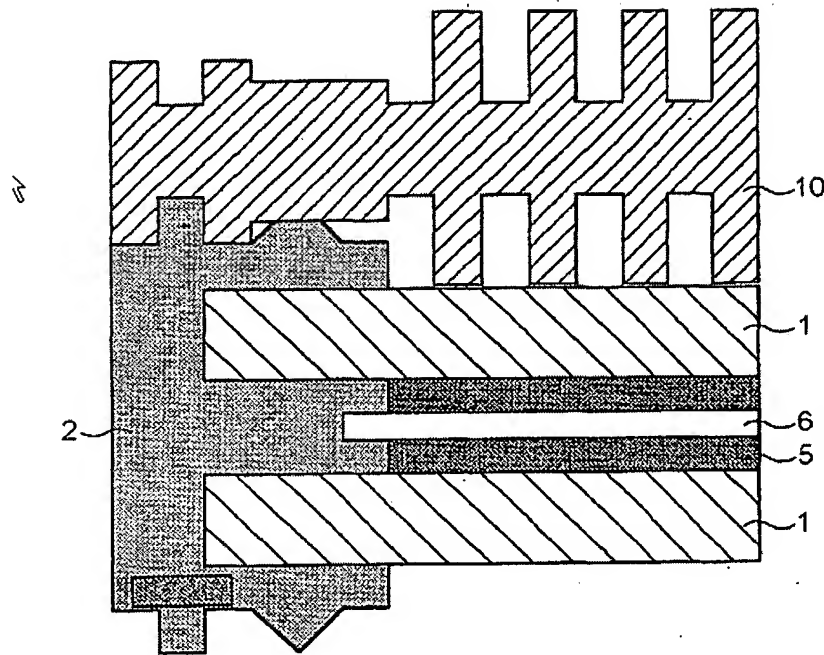


FIG. 10

In the embodiment in Fig. 3, WO '669 discloses a peripheral support structure for supporting the membrane electrode assembly at a periphery between the first reactant flow field and the first seal to impede substantial distortion of the membrane electrode assembly between the first reactant flow field and the first seal wherein the peripheral support structure comprises an edge portion of the first gas diffusion layer surrounding the porous body, and wherein a thickness of the edge portion is reduced from one side of the porous body to provide a step between the porous body and the edge portion (See Fig. 3 below as applied to claims 1 and 11).

The gas diffusion layers 1 have one side which faces the reactant flow in plate 10 and a second side facing the electrode 5 in the membrane electrode

Art Unit: 1745

assembly, MEA, as shown in Fig. 10 above. The gas diffusion layer (GDL) in Fig. 3 then shows the step configuration on the edge of the GDL 1 where the edge of the GDL abuts part of the seal 2 (Fig. 3 as applied to claim 5).

The second side or stepped region side in Fig. 3 faces the membrane electrode assembly and is provided with a sealing insert on the edge portion which is impermeable to process fluids and engaged the edge of the GDL 1 (as applied to claim 9).

Gasket 2 renders the edge to be impermeable to process fluids (as applied to claim 12).

The gasket 2 can be made of silicone (paragraph bridging pages 7 and 8 as applied to claim 13).

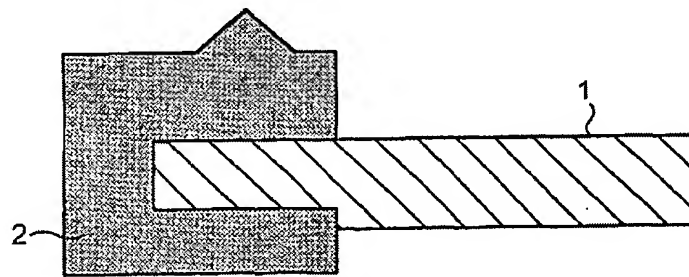
Gasket 2 renders the edge to be impermeable to process fluids and the porous body has first and second sides wherein the thickness of the edge of one of the sides is reduced in a step form (see Fig. 3 as applied to claim 16).

The second side or stepped region side in Fig. 3 faces the membrane electrode assembly and is provided with a sealing insert on the edge portion which is impermeable to process fluids and engaged the edge of the GDL 1 (as applied to claim 18).

WO '669 discloses a gas diffusion layer 1 for an electrochemical cell comprising a first side for receiving process fluids of the electrochemical cell; a second side opposite to the first side; a porous body for diffusing the process fluids from the first side to the second side, the porous body being electrically conductive, and an edge portion surrounding the porous body, wherein the edge

Art Unit: 1745

portion is substantially impermeable to the process fluids since it is sealed by seal element 2 and wherein the edge portion is thinner than the porous body (Fig. 3 as applied to claims 20 and 27). The thickness of the edge portion shown above is reduced from one side of the porous body 1 to the other side with a step feature (as applied to claims 25 and 27).

**FIG. 3**

The gasket 2 can be made of silicone (paragraph bridging pages 7 and 8 as applied to claims 24 and 29).

The thickness of the edge portion shown above is reduced from one side of the porous body 1 to the other side with a step feature (as applied to claim 25).

The gas diffusion layer 1 is shown as a unitary body (as applied to claims 26 and 30).

Gasket 2 renders the edge to be impermeable to process fluids (as applied to claim 28).

Claim Rejections - 35 USC § 103

Art Unit: 1745

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 10, 14 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO '669 in view of either U.S. Patent Application Publication

Art Unit: 1745

No. 2004/0053099 (Franklin) or U.S. Patent Application Publication No.

2003/0072988 (Frisch).

The teachings of WO '669 have been discussed above and incorporated herein.

WO '669 does not teach of silk-screened seals.

WO '669 teaches of using various seal materials in the paragraph bridging pages 7 and 8 including silicone.

It is well known to form silk-screened silicone seals as taught by Franklin (prior art claim 21) or Frisch (paragraph 15) .

The silkscreen process is advantageous in that it is a very simple process which can significantly reduce the loss of materials by appropriate control of the amount of supply and also has an excellent dimensional stability. For these reasons, the silkscreen process may be preferred, due to its cost-effectiveness and relatively short manufacturing period of time.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of WO '669 by forming the seals therein via a silk-screen process since it would have simplified the seal fabrication and reduced the cost of production of the product.

10. Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO '669.

The teachings of WO '669 have been discussed above and incorporated herein.

Art Unit: 1745

WO '669 does not teach of the step being on the first side of the GDL which faces the reactant flow field plate.

WO '669 teaches of providing a stepped feature to the GDL and providing the stepped feature within the seal.

While the stepped feature is on the surface facing the MEA, the core teachings of WO '669 teach that the use of a stepped seal is known to maximize the perimeter seal (page 12, ll. 19-30). Placing the step on either side of the GDL would have constituted a simple change in design choice while still providing the same edge arrangement and advantageous seal and there is no evidence of criticality for the stepped feature being disposed on one side of the GDL relative to it being disposed on the other.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of WO '669 by providing the stepped feature on the first side of the GDL facing the reactant flow field plates since it would have represented a simple change in design which would have met the core teachings of WO '669.

Allowable Subject Matter

11. Claims 6-8 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record are considered to teach, suggest or render obvious the invention of claims 6 or 19 wherein the sealing insert and

Art Unit: 1745

step are configured as defined therein so as to provide a substantially flat surface for supporting the MEA.

While various embodiments are disclosed in the instant application, the prior art of record does not reasonably teach this arrangement. For example WO '669 which teaches of a stepped GDL (Fig. 3) having an insert there in does not show or suggest the insert to provide the requisite claimed substantially flat surface. None of the remaining prior art of record, alone or in combination, appears to teach, suggest or render obvious the features of claims 6 or 19.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



gc
May 10, 2007

Gregg Cantelmo
Primary Examiner
Art Unit 1745